UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/675,357	09/29/2000	Alex P. Yung	NCRC-0028-US (9433)	1117

26890 7590 05/20/2004

JAMES M. STOVER
NCR CORPORATION
1700 SOUTH PATTERSON BLVD, WHQ4
DAYTON, OH 45479

EXAMINER	
ALI, SYED J	

ART UNIT	PAPER NUMBER
2127	

DATE MAILED: 05/20/2004

7

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/675,357	Applicant(s) YUNG ET AL.	
	Examiner Syed J Ali	Art Unit 2127	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *16 March 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-22,24,25 and 28-52* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-22,24,25 and 28-52* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. This office action is in response to the amendment filed March 16, 2004. Claims 1-22, 24-25, and 28-52 are presented for examination.

2. The text of those sections of Title 35, U.S. code not included in this office action can be found in a prior office action.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claim 51 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

5. The following terms lack antecedent basis:

a. In line 1 of claim 51, "The article of claim 51". Hereinafter, it is interpreted that this limitation was meant to read "The article of claim 50".

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. **Claims 1-6, 15, 21-22, 24-25, 28-30, 35-37, 43-44, 46-47, and 49-51 are rejected under 35 U.S.C. 102(b) as being anticipated by Swami et al. (USPN 5,845,113) (hereinafter Swami).**

8. As per claim 1, Swami teaches the invention as claimed, including a method of performing parallel data operations upon data in a database, comprising:

receiving a data transaction request in a client system (col. 6 lines 42-50); and

executing a plurality of multi-phase parallel tasks in response to the request to perform the data operations upon the data in the database (col. 6 line 51 - col. 7 line 33).

9. As per claim 2, Swami teaches the invention as claimed, including the method of claim 1, wherein receiving a data transaction request comprises receiving a request for loading data into the database (col. 6 lines 42-50).

10. As per claim 3, Swami teaches the invention as claimed, including the method of claim 1, wherein receiving a data transaction request comprises receiving a request to perform a data transformation operation upon the data in the database (col. 6 line 42 - col. 7 line 33).

11. As per claim 4, Swami teaches the invention as claimed, including the method of claim 3, wherein receiving a request to perform the data transformation operation comprises receiving a request to perform one of a data selection operation, a data validation operation, a data cleansing operation, and a data query operation (col. 6 line 42 - col. 7 line 33).

12. As per claim 5, Swami teaches the invention as claimed, including the method of claim 1, wherein executing the multi-phase parallel tasks comprises executing each of the parallel tasks in plural phases (col. 7 lines 34-49).

13. As per claim 6, Swami teaches the invention as claimed, including the method of claim 5, comprising executing a first parallel task in a first number of phases and a second parallel task in a second, different number of phases (col. 7 line 50 - col. 8 line 4).

14. As per claim 15, Swami teaches the invention as claimed, including an apparatus, comprising:

a user interface (col. 6 lines 42-50);

a processor coupled with the user interface, wherein the processor receives a data transaction request from the user interface (col. 6 lines 42-50); and

a controller coupled with the processor, wherein the controller performs a plurality of tasks in parallel based upon instructions received from the processor, each tasks performed in a plurality of phases (col. 6 line 51 - col. 7 line 49).

15. As per claim 21, Swami teaches the invention as claimed, including the apparatus of claim 15, wherein the controller is coupled with the processor, wherein the controller performs a number of tasks in parallel based upon instructions received from the processor, each task

performed in a plurality of phases further comprises the controller performing the tasks in a sequence of multiple process steps (col. 6 lines 25-31; col. 7 lines 24-49).

16. As per claim 22, Swami teaches the invention as claimed, including a system, comprising:

a database system (col. 5 line 52 - col. 6 line 13);

a network (col. 6 lines 14-16); and

a client system separate from the database system and coupled to the database system over the network, the client system to establish plural sessions with the database system to implement a plurality of data operations upon the database system in parallel (col. 6 line 51 - col. 7 line 33).

17. As per claim 24, Swami teaches the invention as claimed, including the system of claim 22, wherein the database is a parallel database system (col. 5 line 52 - col. 6 line 13).

18. As per claim 25, Swami teaches the invention as claimed, including the system of claim 22, wherein the client system comprises:

a processor to receive a data transaction request (col. 5 line 52 - col. 6 line 13);

a plurality of operators to perform parallel data operations in response to the data transaction request (col. 5 line 52 - col. 6 line 13);

an operator interface coupled to the operators, wherein the operator interface allows communications between the operators (col. 5 line 52 - col. 6 line 16).

19. As per claim 28, Swami teaches the invention as claimed, including an article comprising at least one storage medium containing instructions that when executed cause a client system to:

receive a data transaction request (col. 6 lines 42-50); and

execute a plurality of parallel tasks in response to the request to perform data operations upon the data in a database system over a network connection, wherein the client system is separate from the database system (col. 6 line 51 - col. 7 line 33).

20. As per claim 29, Swami teaches the invention as claimed, including the article of claim 28, wherein the instructions when executed cause the client system to execute each of the parallel tasks in plural phases (col. 7 lines 34-49).

21. As per claim 30, Swami teaches the invention as claimed, including the article of claim 29, wherein the instruction when executed cause the client system to execute a first parallel task in a first number of phases and a second parallel task in a second, different number of phases (col. 7 line 50 - col. 8 line 4).

22. As per claim 35, Swami teaches the invention as claimed, including a method of performing parallel data operations upon data in a database, comprising:

receiving a data transaction request (col. 6 lines 42-50); and

executing a plurality of synchronized multi-phase parallel tasks in response to the request to perform the data operations upon the data in the database (col. 6 line 51 - col. 7 line 33).

23. As per claim 36, Swami teaches the invention as claimed, including the method of claim 35, wherein executing the multi-phase parallel tasks comprises executing each of the parallel tasks in plural phases (col. 7 lines 34-49).

24. As per claim 37, Swami teaches the invention as claimed, including the method of claim 36, comprising executing a first parallel task in a first number of phases and a second parallel task in a second, different number of phases (col. 7 line 50 - col. 8 line 4).

25. As per claim 43, Swami teaches the invention as claimed, including the method of claim 1, wherein executing the plurality of multi-phase parallel tasks comprises:

executing at least first and second software components in parallel (col. 6 line 51 - col. 7 line 33);

each of the first and second software components performing one or more operations in a first phase (col. 6 lines 34-49);

waiting for a message from each of the first and second software components prior to proceeding to a second phase (col. 6 lines 34-49); and

each of the first and second software components performing one or more operations in the second phase (col. 6 lines 34-49).

26. As per claim 44, Swami teaches the invention as claimed, including the method of claim 43, further comprising:

waiting for another message from each of the first and second software components prior to proceeding to a third phase (col. 6 lines 34-49);

the first software component performing one or more operations in the third phase (col. 6 lines 34-49); and

the second software component being idle in the third phase (col. 3 lines 7-22).

27. As per claim 46, Swami teaches the invention as claimed, including the apparatus of claim 15, wherein the controller comprises at least first and second software components executable in parallel to perform the plurality of tasks (col. 6 line 51 - col. 7 line 33);

wherein each of the first and second software components is executable to perform one or more operations in a first phase (col. 6 lines 34-49);

the controller to wait for a message from each of the first and second software components prior to proceeding to a second phase (col. 6 lines 34-49); and

wherein each of the first and second software components is executable to perform one or more operations in the second phase (col. 6 lines 34-49).

28. As per claim 47, Swami teaches the invention as claimed, including the apparatus of claim 46, wherein the controller is adapted to further wait for another message from each of the first and second software components prior to proceeding to a third phase (col. 6 lines 34-49);

wherein the first software component is executable to perform one or more operations in the third phase (col. 6 lines 34-49), and the second software component is idle in the third phase (col. 3 lines 7-22).

29. As per claim 49, Swami teaches the invention as claimed, including the system of claim 22, wherein the client system is adapted to execute plural tasks in parallel, each of the plural tasks executable in plural phases (col. 7 lines 34-49).

30. As per claim 50, Swami teaches the invention as claimed, including the article of claim 29, wherein executing each of the parallel tasks in plural phases comprises:

executing at least first and second software components in parallel (col. 6 line 51 - col. 7 line 33);

each of the first and second software components performing one or more operations in a first phase (col. 6 lines 34-49);

waiting for a message from each of the first and second software components prior to proceeding to a second phase (col. 6 lines 34-49); and

each of the first and second software components performing one or more operations in the second phase (col. 6 lines 34-49).

31. As per claim 51, Swami teaches the invention as claimed, including the article of claim 50, wherein the instructions when executed cause the client system to further:

wait for another message from each of the first and second software components prior to proceeding to a third phase (col. 6 lines 34-49);

cause the first software component to perform one or more operations in the third phase (col. 6 lines 34-49); and

cause the second software component to be idle in the third phase (col. 3 lines 7-22).

Claim Rejections - 35 USC § 103

32. **Claims 7-14, 16-20, 31-34, 38-42, 45, 48, and 52 are rejected under 35 U.S.C. 103(a) as being unpatentable over Swami in view of Desai et al. (USPN 5,692,182) (hereinafter Desai).**

33. As per claim 7, Desai teaches the invention as claimed, including the method of claim 5, further comprising each parallel task providing a code to indicate if the task is to be re-invoked in the next phase (col. 11 line 47 - col. 12 line 17).

34. It would have been obvious to one of ordinary skill in the art to combine Swami and Desai since Swami indicates that there is a need for database parallelism that reduces the number of physical I/Os, which are typically slow operations, particularly in cases where a network may have nodes separated by large distances (col. 4 lines 1-7). Desai presents a similar problem, also indicating a need for parallelism to break down long-running or complex queries (col. 3 line 63 - col. 4 line 34). While Swami teaches distributing portions of a complex query among several networked sites, Swami fails to repetitively execute tasks for data that has been changed. This may lead to inaccurate or inefficient data that needs to be resorted at a later point. Desai remedies this by organizing the distribution of processing within a task plan and a task coordinator site, and allowing operations to be reissued for data that has been changed.

35. As per claim 8, Desai teaches the invention as claimed, including the method of claim 7, wherein providing the code comprises providing the code to a task coordinator (col. 6 lines 12-24; col. 10 line 62 - col. 11 line 46).

36. As per claim 9, Desai teaches the invention as claimed, including the method of claim 8, wherein the code comprises a first code to indicate that the task coordinator is to invoke a component in the next phase (col. 11 line 47 - col. 12 line 17).

37. As per claim 10, Desai teaches the invention as claimed, including the method of claim 8, wherein the code comprises a second code to indicate that the task is not to invoke a component in the next phase (col. 11 line 47 - col. 12 line 17).

38. As per claim 11, Desai teaches the invention as claimed, including the method of claim 1, further comprising:

analyzing the transaction request (col. 10 line 62 - col. 11 line 46);

creating a task plan in response to the transaction request (col. 10 line 62 - col. 11 line 46);

implementing the task plan in a multi-phase organization (col. 10 line 62 - col. 11 line 46);

executing a plurality of tasks in parallel to implement the task plan (col. 10 line 62 - col. 11 line 46);

determining whether an additional phase is required to execute the tasks (col. 11 line 47 - col. 12 line 17); and

scheduling an additional phase in response to the determination that an additional phase is required (col. 11 line 47 - col. 12 line 17).

39. As per claim 12, Desai teaches the invention as claimed, including the method of claim 11, wherein implementing the task plan comprises creating a job script (col. 11 line 47 - col. 12 line 17).

40. As per claim 13, Desai teaches the invention as claimed, including the method of claim 11, wherein implementing the task plan comprises:

translating the task plan (col. 11 line 47 - col. 12 line 17);

selecting a plurality of software components to implement the translated task plan (col. 10 line 62 - col. 11 line 46);

assigning a plurality of processes corresponding to the software components (col. 10 line 62 - col. 11 line 46); and

creating a communications channel to allow for communications between the processes (col. 9 lines 40-54).

41. As per claim 14, Swami teaches the invention as claimed, including the method of claim 13, wherein selecting the plurality of software components to implement the translated task plan comprises selecting the plurality of software components to perform at least one of a data

extraction operation, a data transformation operation, and a data loading operation (col. 6 lines 42-50).

42. As per claim 16, Desai teaches the invention as claimed, including the apparatus of claim 15, wherein the processor generates a task plan in response to the data transaction request (col. 10 line 62 - col. 11 line 46).

43. As per claim 17, Desai teaches the invention as claimed, including the apparatus of claim 16, wherein the controller comprises a task coordinator to execute the task plan (col. 6 lines 12-24; col. 10 line 62 - col. 11 line 46).

44. As per claim 18, Desai teaches the invention as claimed, including the apparatus of claim 16, wherein the controller further comprises a plurality of components to implement the task plan in parallel (col. 10 line 62 - col. 11 line 46).

45. As per claim 19, Swami teaches the invention as claimed, including the apparatus of claim 18, further comprising a communications interface for enabling communications between the components (col. 6 lines 14-16).

46. As per claim 20, Swami teaches the invention as claimed, including the apparatus of claim 18, wherein the controller further comprises a storage unit for storing methods and functions to execute the task plan (col. 5 line 52 - col. 6 line 13).

47. As per claim 31, Desai teaches the invention as claimed, including the article of claim 29, wherein the instructions when executed cause each parallel task to provide a code to indicate if the task is to be re-invoked in the next phase (col. 11 line 47 - col. 12 line 17).

48. As per claim 32, Desai teaches the invention as claimed, including the article of claim 31, wherein the instructions when executed cause the parallel task to provide the code to a task coordinator (col. 6 lines 12-24; col. 11 line 47 - col. 12 line 17).

49. As per claim 33, Desai teaches the invention as claimed, including the article of claim 32, wherein the code comprises a first code to indicate that the task coordinator is to invoke a component in the next phase (col. 11 line 47 - col. 12 line 17).

50. As per claim 34, Desai teaches the invention as claimed, including the article of claim 32, wherein the code comprises a second code to indicate that the task is not to invoke the component in the next phase (col. 11 line 47 - col. 12 line 17).

51. As per claim 38, Desai teaches the invention as claimed, including the method of claim 36, further comprising each parallel task providing a code to indicate if the task is to be re-invoked in the next phase (col. 11 line 47 - col. 12 line 17).

52. As per claim 39, Desai teaches the invention as claimed, including the method of claim 38, wherein providing the code comprises providing the code to a task coordinator (col. 6 lines 12-24; col. 11 line 47 - col. 12 line 17).

53. As per claim 40, Desai teaches the invention as claimed, including the method of claim 39, wherein the code comprises a first code to indicate that the task coordinator is to invoke a component in the next phase (col. 11 line 47 - col. 12 line 17).

54. As per claim 41, Desai teaches the invention as claimed, including the method of claim 39, wherein the code comprises a second code to indicate that the task is not to invoke a component in the next phase (col. 11 line 47 - col. 12 line 17).

55. As per claim 42, Swami teaches the invention as claimed, including the method of claim 39, wherein the code synchronizes the operation of one or more components (col. 7 lines 34-49).

56. As per claim 45, Desai teaches the invention as claimed, including the method of claim 44, further comprising:

receiving a first message from the first software component indicating that the first software component is to be re-invoked in the third phase (col. 11 line 47 - col. 12 line 17); and

receiving a second message from the second software component indicating that the second component is not to be re-invoked in the third phase (col. 11 line 47 - col. 12 line 17).

57. As per claim 48, Desai teaches the invention as claimed, including the apparatus of claim 47, wherein the controller is adapted to further:

receive a message from the first software component indicating that the first software component is to be re-invoked in the third phase (col. 11 line 47 - col. 12 line 17); and

receive a second message from the second software component indicating that the second component is not to be re-invoked in the third phase (col. 11 line 47 - col. 12 line 17).

58. As per claim 52, Desai teaches the invention as claimed, including the article of claim 51, wherein the instructions when executed cause the client system to further:

receive a first message from the first software component indicating that the first software component is to be re-invoked in the third phase (col. 11 line 47 - col. 12 line 17); and

receive a second message from the second software component indicating that the second software component is not to be re-invoked in the third phase (col. 11 line 47 - col. 12 line 17).

Response to Arguments

59. Applicant's arguments with respect to claims 1-22, 24-25, and 28-52 have been considered but are moot in view of the new grounds of rejection.

Conclusion

60. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Wolf et al. (USPN 5,765,146) teaches a method of performing parallel database operations in a plurality of multi-phase tasks.

61. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Syed J Ali whose telephone number is (703) 305-8106. The examiner can normally be reached on Mon-Fri 8-5:30, 2nd Friday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Meng-Ai T An can be reached on (703) 305-9678. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Syed Ali
May 11, 2004

MENG-AL T. AN
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2100